

Please add the following new claims:

--21. A power supply according to claim 1, wherein said DC converter includes a plurality of multiplexed DC converters connected in parallel in which each DC converter of the plurality of DC converters is selected in accordance with the load capacity and purpose of use.

22. A power supply according to claim 1, wherein said DC converter includes a plurality of multiplexed DC converters connected in parallel in which each DC converter of the plurality of DC converters is selected in accordance with the load capacity and purpose of use.--

REMARKS

By the above amendment, claims 1 and 15 have been amended to recite additional feature of the control circuit controls said output voltage of said DC power of said AC/DC converter to be equal to a predetermined DC voltage. Further, claims 1 and 15 have been amended to recite the additional feature of the DC converter being bidirectional in operation in order to charge and discharge the DC power supply means. Additionally, new dependent claims 21 and 22 have been presented.

As to the rejection of claims 1-13 and 19 under 35 U.S.C. §103 as being unpatentable over Yeh in combination with Gephardt et al. and the rejection of claims 15-18 and 20 under 35 U.S.C. §103(a) as being unpatentable over Yeh in combination with Gephardt et al. and further in combination with Kageyama, such rejections are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

At the outset, applicants note that independent claims 1 and 15 have been amended to recite the feature that the control circuit controls the output voltage of the DC power of the AC/DC converter to be equal to a predetermined DC voltage. Applicants note that such control circuit controlling said output voltage of said DC power of said AC/DC converter to be equal to a predetermined DC voltage is represented by the control circuit 11 illustrated in Fig. 3 of the drawings of this application and described at page 10, line 23 to page 11, line 9. More particularly, as indicated, "the control circuit 11 controls the output voltage of the AC/DC converter 1 to be equal to a predetermined DC voltage on the basis of the ON/OFF actuation of a semiconductor switching device of the main circuit 12" and further, "the control circuit 11 has a power-factor improvement function and hence performs controlling to suppress harmonic current in the AC input".

Still further it should be noted that Gephardt et al. discloses an uninterruptible power supply (UPS) having an AC/DC converter 60, a DC/DC converter 64 and 80 bidirectional DC/DC converter 52 including AC/DC converter for charging a battery 50 and 82nd DC/DC converter for discharging the battery 50. Still further it should be noted that the DC/DC converter for charging is different from the DC/DC converter for discharging as provided in column 6, lines 6-7 as well as indicated in Fig. 4A. and FIG. 4B. Specifically, in Fig. 4A, the converter 52 includes an inverter 53, while in FIG. 4B, the circuit 150 in the lower right hand side of the Fig. is separate from the inverter 53 previously discussed. However, in the present invention a single DC/DC converter three issues for both charging and discharging, as previously discussed.

Applicants note that dependent claims 19 and 20 recite the further features of the control circuit 11 as described above. However, in the office action mailed February 28, 2001 the Examiner provided no citation in either in Yeh or Gephardt et al. disclosing a control circuit to control the output voltage of the DC power of the AC/DC converter to be equal to a predetermined voltage. Further, no reference cited supports the assertion that this control is based on an on/off actuation of a semiconductor switching device of a main circuit of the AC/DC converter and effects control to suppress harmonic current in the received AC power.

Is respectfully requested that the Examiner provide a specific citation in Gephardt et al. disclosing the features recited in claims 19 and 20 as well as independent claims 1 and 15. Further, if the Examiner is of the opinion that if any of the features recited in claims 1, 15, 19 and 20 are "well known" in the art then it is respectfully requested that the Examiner provide a supply a reference as required under M.P.E.P. §2144.03.

Additionally, it is apparent that as described in the specification at page 14, lines 4-9, page 15, lines 23-28, page 16, lines 18-23, page 18, lines 14-18 and page 19, lines 13-17, each of Figs. 4-8 have a construction corresponding to that as illustrated in Figs. 2 and 3, such that in all disclosed embodiments, the AC/DC converter includes a control circuit operating in the manner defined. Further, as described in the specification at page 10, lines 23 through page 11, line 9 and more specifically at page 11, lines 1-9 the control circuit 11 controls the output voltage of the AC/DC converter 1 to a predetermined DC voltage on the basis of an ON/OFF actuating command. Still further, the control circuit 11 suppresses harmonic current in AC input of the AC/DC converter 1 through its control function.

It should also be noted that independent claims 1 and 15 have been amended to recite the feature that the DC converter 3 is bidirectional so as to charge and discharge the DC power supply means. Applicants note that the DC converter 3 comprises a first converter 32a, a transformer 32c and a second converter 32b. The configuration of the DC converter 3 allows it to be bidirectional. Therefore, as detailed at page 7, line 5 through page 8, line 20, the DC converter 3 can either charge battery 4 using current AC/DC converter 1 or supply power from battery 4 to DC/DC converter 2 using the configuration.

Turning to the combination of patents to Yeh and Gephardt et al., applicants note that irrespective of the Examiner's comments, this patent does not disclose an AC/DC converter having a control circuit and operating in the manner set forth in claim 1 for controlling an output voltage of the DC power outputted by the AC/DC converter 1 to be equal to a predetermined DC voltage. Further, Yeh and Gephardt et al. does not disclose the DC converter being bidirectional to charge and discharge said DC power supply means using a single unit. As such, applicants submit that independent claim 1 and the dependent claims patentably distinguish over Yeh in the sense of 35 U.S.C. §102, and should be considered allowable there over.

As to the combination of Yeh, Gephardt and Kageyama, applicants note that the Examiner contends that Yeh and Gephardt et al. discloses the claimed invention except for parallel connecting a plurality of converters or modules which is disclosed by Kageyama. Irrespective of the Examiner's contentions, as pointed out above, Yeh and Gephardt et al. does not disclose an AC/DC converter having a control circuit operating in the manner defined, and such feature is also not disclosed by

Kageyama. Assuming arguendo that the first device 15 of Yeh and Gephardt et al. represents an AC/DC converter in that there is provided a AC input and a DC output, it is readily apparent that the disclosed features do not provide a control circuit which controls the output voltage of the AC/DC converter to be equal to a predetermined DC voltage, as recited in independent claims 1 and 15. Further, it is also readily apparent that the DC converter is bidirectional to charge and discharge the DC power supply means.

Accordingly, the proposed combination fails to disclose or teach the claimed features in the sense of 35 U.S.C. §103, and the features as recited in independent claims 1 and 15 and the dependent claims thereof when considered together with the dependent claims, patentably distinguish over Yeh, Gephardt et al. and Kageyama taken alone or in any combination thereof in the sense of 35 U.S.C. §103, and should be considered allowable there over.

As noted above, new dependent claims 21 and 22 have been added wherein claims 21 depends from claim 1 and further recites the feature that the DC converter includes a plurality of multiplexed DC converters connected in parallel in which each DC converter of the plurality of DC converters is selected in accordance with the load capacity and purpose of use. New dependent claim 22 which depends from claim 15 recites the same features and applicants submit that these additional features are not disclosed or taught in the cited art, and such claims should also be considered allowable at this time.

In view of the above amendments and remarks, applicants submit that all claims present in this application should be considered to patentably distinguish

over the cited art, such that issuance of an action of a favorable nature is
courteously solicited.

Attached hereto is a marked-up version of the changes made to the
specification and claims by the current amendment. The attached page is captioned
“Version with markings to show changes made.”

To the extent necessary, Applicant petitions for an extension of time under 37
CFR §1.136. Please charge any shortage in the fees due in connection with the
filing of this paper, including extension of time fees and excess claim fees, to
Deposit Account No. 01-2135 (referencing case No. 500.38034CX1) and please
credit any excess fees to such deposit account.

Respectfully submitted,



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Version with markings to show changes made

IN THE CLAIMS

Please amend the claims as follows:

1. (Twice Amended) A power supply comprising:

an AC/DC converter which receives AC power, converts said AC power into DC power, and outputs said DC power, said AC/DC converter including a control circuit which controls an output voltage of said DC power output from said AC/DC converter, wherein said control circuit controls said output voltage of said DC power of said AC/DC converter to be equal to a predetermined DC voltage;

a DC/DC converter which receives said DC power from said AC/DC converter and controls a level of an output voltage of said DC/DC converter to be equal to a level of a voltage to be used by a load while said DC/DC converter supplies said output voltage of said DC/DC converter having a level thereof controlled to said load;

a DC converter which is connected to an input of said DC/DC converter; and a DC power storage means which supplies electric power to said DC/DC converter through said DC converter, said DC converter being bidirectional to charge and discharge said DC power supply means.

15. (Twice Amended) A power supply comprising a plurality of power supply units connected in parallel with one another, wherein each of said plurality of power supply units includes:

an AC/DC converter which receives AC power, converts said AC power into DC power, and outputs said DC power, said AC/DC converter including a control

circuit which controls an output voltage of said DC power output from said AC/DC converter, wherein said control circuit controls said output voltage of said DC power of said AC/DC converter to be equal to a predetermined DC voltage;

a DC/DC converter which receives said DC power from said AC/DC converter, and controls a level of an output voltage of said DC/DC converter to be equal to a level of a voltage to be used by a load while said DC/DC converter supplies said output voltage to said load;

a DC converter which is connected to an input of said DC/DC converter; and

a DC power storage means which supplies electric power to said DC/DC converter through said DC converter, said DC converter being bidirectional to charge and discharge said DC power supply means.

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